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MALARIA IN TENNESSEE.

PREVALENCE AND GEOGRAPHIC DISTRIBUTION.

The periodical circularization of the physicians of Tennessee to determine the prevalence and geographic distribution of malarial infection in the State was begun in 1913, and continued during 1914, 1915, and 1916. At regular intervals reply postal cards were sent to the practicing physicians. These cards were at first sent out each month. Beginning with April 1, 1915, they were sent out quarterly.[1] A reproduction of the card used during 1915 and 1916 will be found on page 1128 of the Public Health Reports of the issue of July 20, 1917.

Of the cards sent to physicians an average of less than 9 per cent were returned. Those returning the cards with the requested data filled in undoubtedly constituted the better class of practitioners—those who understood most clearly what was wanted and the value of the work. The number of cards sent out, the number of schedules returned, and the counties represented at each circularization are shown in Table No. 1.

It is to be borne in mind that the number of cases reported by the physicians by no means shows the number of cases that occurred, for an average of less than 9 per cent of the physicians returned the schedules.

The return of the schedules by the physicians being a matter of voluntary cooperation, the data are undoubtedly reliable to an unusual degree as regards the experience of the physicians who cooperated and the number of cases seen by them. It is to be borne in mind, however, that the cases reported represent only those occurring in the practices of the physicians who cooperated. The total number of cases of malaria occurring in the practices of all the physicians of the State must have been many times greater, also the number of cases that occurred in which no physician was in attendance or consulted was probably much greater than the number coming under medical care.

The physicians who cooperated were distributed as to locality throughout all sections of the State, so that the data of the occurrence of malaria furnished by them show the geographic distribution of the disease and reasonably accurately its relative prevalence in the various localities.

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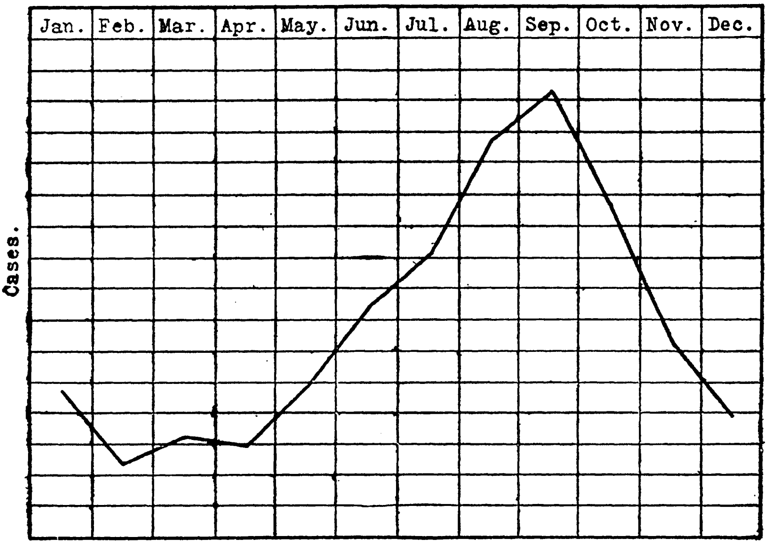
[1] The work of circularization and of compilation of the data on the return cards was carried on by the late Surg. R. H. von Ezdorf up to the time of his death, in September, 1916. Since then it has been carried on by Asst. Surg. R. C. Derivaux and Asst. Surg. Gen. H. R. Carter.

The cases reported throughout the State by months are shown in Table No. 2. The relative numbers of cases reported by months are shown in the chart.

The number of cases reported from the several counties of the State are given by race and year in Table No. 3.

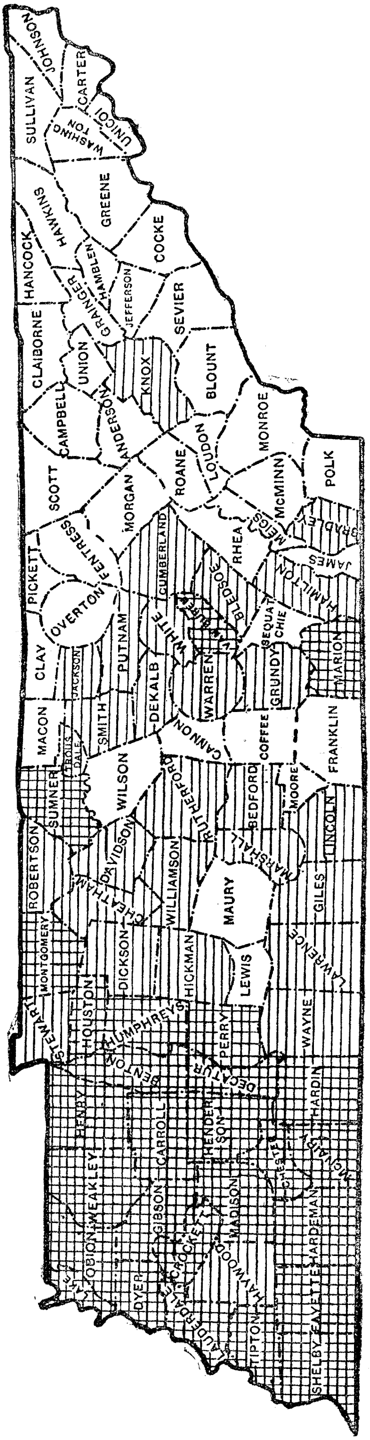
The map on page 1341 shows the relative prevalence of the disease in the several counties of the State, the heavier shaded counties being those in which the infection is heaviest, the unshaded counties those in which the infection is lightest, as indicated by the numbers of cases reported. The relative density of infection was determined by ascertaining the number of cases reported in each county during the entire period for which reports were received per 1,000 population. The population used was that of the 1910 census, it being impracticable to estimate populations for the period of the circularization.



Relative prevalence of malaria in Tennessee, by months, as indicated by the numbers of cases reported.

The types of malarial infection reported to have been diagnosed microscopically are shown in Table No. 4. It will be noted that tertian infection was reported to have been so diagnosed in 31 counties, quartan in 21 counties, and estivo-autumnal in 24 counties.

By Table No. 5 it will be noted that hemoglobinuric fever was reported in 5 counties.



Relative prevalence of malaria in Tennessee, by counties in proportion to the population, as indicated by the numbers of cases reported.

TABLE 1.—*Results of circularization of practicing physicians.*

Period.	Inquiry cards sent to physicians.	Replies received.	Percentage of replies.	Counties represented in replies.	Counties not heard from.	Cases of malaria reported.
1913.						
August to November	3,338	609	18.24	....	....	5,074
1914.						
January to December	39,594	4,724	11.93	....	....	6,654
1915.						
January to March	10,014	1,137	11.35	89	7	572
April to June	3,338	279	8.36	65	31	739
July to September	3,338	230	6.89	73	23	1,628
October to December	3,338	146	4.37	65	31	626
1916.						
January to March	3,338	63	1.89	29	67	69
April to June	3,338	164	4.91	68	28	598
July to September	3,338	287	8.60	80	16	3,607
October to December	3,338	449	13.45	88	8	2,050

TABLE 2.—*Cases of malaria reported, by months.*

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1913	......	......	......	......	......	......	......	1,482	1,556	1,383	653	......
1914	735	289	398	362	597	757	554	680	768	745	443	326
1915	189	177	206	132	222	385	326	532	770	413	138	75
1916	17	21	31	103	163	332	940	1,342	1,325	979	689	382

TABLE 3.—*Cases reported, by counties, by years, and by color.*

County.	Aug. 1 to Nov. 30, 1913.			Calendar year 1914.			Calendar year 1915.			Calendar year 1916.		
	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.
Anderson	......	......	......	3	......	3	1	......	1	......	......	......
Bedford	17	1	18	45	17	62	4	......	4	23	8	31
Benton	38	6	44	59	18	77	102	39	141	132	48	180
Bledsoe	......	......	......	12	13	25	......	......	......	3	......	3
Blount	6	......	6	7	......	7	......	......	......	9	......	9
Bradley	3	......	3	23	5	28	39	3	42	16	2	18
Campbell	......	......	......	34	1	35	2	......	2	3	......	3
Cannon	......	......	......	2	......	2	5	......	5	1	......	1
Carroll	16	7	23	79	22	101	74	27	101	151	12	163
Carter	1	......	1	2	......	2	2	......	2	3	......	3
Cheatham	55	28	83	19	4	23	26	18	44	......	......	......
Chester	32	31	63	82	33	115	93	33	126	154	154	308
Claiborne	......	......	......	1	......	1	......	......	......	......	......	......
Clay	......	......	......	3	......	3	5	......	5	5	......	5
Cocke	19	......	19	......	......	......	......	......	......	14	7	21
Coffee	......	4	4	17	3	20	......	......	......	22	6	28
Crockett	118	120	238	71	35	106	35	18	53	36	18	54
Cumberland	......	......	......	3	......	3	......	......	......	76	26	102
Davidson	156	23	179	255	35	290	55	33	88	58	11	69
Decatur	48	6	54	85	8	93	54	19	73	176	35	211
Dekalb	43	6	49	32	3	35	......	......	......	12	2	14
Dickson	6	......	6	40	7	47	52	7	59	13	3	16
Dyer	152	21	173	151	5	156	166	28	194	276	66	342
Fayette	54	36	90	7	18	25	4	3	7	95	150	245
Fentress	5	......	5	1	......	1	......	......	......	2	......	2
Franklin	13	4	17	17	3	20	......	......	......	14	......	14
Gibson	77	39	116	482	151	633	74	28	102	272	116	388
Giles	23	2	25	54	12	66	19	1	20	34	13	50
Grainger	1	......	1	6	1	7	......	......	......	2	......	2

TABLE 3.—*Cases reported, by counties, by years, and by color*—Continued.

County.	Aug. 1 to Nov. 30, 1913.			Calendar year 1914.			Calendar year 1915.			Calendar year 1916.		
	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.
Greene	3	......	3	5	......	5	3	......	3	2	......	2
Grundy	12	......	12	21	5	26	10	1	11	36	2	38
Hamblen	......	......	......	2	......	2	......	......	......	......	......	......
Hamilton	73	18	91	140	15	155	53	13	66	95	25	120
Hancock	6	......	6	1	......	1	......	......	......	......	......	......
Hardeman	15	19	34	91	49	140	33	38	71	123	106	229
Hardin	45	......	45	251	44	295	86	39	125	84	23	107
Hawkins	......	......	......	......	......	......	......	......	......	4	......	4
Haywood	3	1	4	7	1	8	19	30	49	30	10	40
Henderson	18	18	36	42	10	52	20	8	28	59	43	102
Henry	9	......	9	67	9	76	18	5	23	57	52	109
Hickman	54	4	58	18	3	21	22	5	27	29	2	31
Houston	48	9	57	22	7	29	25	......	25	12	11	23
Humphreys	10	......	10	37	2	39	139	......	139	44	1	45
Jackson	9	......	9	15	......	15	2	......	2	45	......	45
James	......	......	......	......	......	......	......	......	......	2	......	2
Jefferson	11	2	13	21	......	21	1	......	1	......	......	......
Johnson	4	......	4	1	......	1	2	......	2	......	......	......
Knox	53	4	57	201	2	203	68	5	73	46	1	47
Lake	30	15	45	16	8	24	201	212	413	60	53	113
Lauderdale	121	91	212	95	65	160	12	......	12	224	108	332
Lawrence	53	......	53	16	......	16	24	......	24	71	5	76
Lewis	......	......	......	12	......	12	......	......	......	......	......	......
Lincoln	84	16	100	107	25	132	51	16	67	34	11	45
Loudon	......	......	......	18	......	18	4	......	4	3	......	3
McMinn	1	......	1	5	......	5	18	4	22	8	3	11
McNairy	......	......	......	84	23	107	30	9	39	74	11	85
Macon	......	......	......	7	3	10	......	......	......	......	......	......
Madison	......	......	......	144	48	192	53	5	58	277	110	387
Marion	270	136	406	57	......	57	6	4	10	50	28	78
Marshall	56	9	65	31	1	32	23	9	32	24	3	27
Maury	11	5	16	16	4	20	32	6	38	6	1	7
Meigs	......	......	......	2	......	2	1	......	1	......	......	......
Monroe	3	......	3	8	3	11	17	1	18	12	1	13
Montgomery	31	23	54	100	113	213	80	38	118	91	34	125
Moore	......	......	......	......	......	......	......	......	......	......	......	......
Morgan	5	......	5	......	......	......	......	......	......	3	......	3
Obion	174	......	174	169	52	221	6	......	6	107	65	172
Overton	......	......	......	27	......	27	7	......	7	10	......	10
Perry	17	......	17	9	......	9	5	......	5	208	2	210
Pickett	......	......	......	12	......	12	......	......	......	......	......	......
Polk	21	4	25	1	......	1	8	......	8	9	......	9
Putnam	18	4	22	60	4	64	9	......	9	63	4	67
Rhea	1	......	1	11	......	11	......	......	......	......	......	......
Roane	16	......	16	3	......	3	2	......	2	6	......	6
Robertson	20	5	25	45	11	56	28	3	31	59	3	62
Rutherford	11	......	11	97	36	133	8	71	79	32	45	77
Scott	......	......	......	31	......	31	20	......	20	13	......	13
Sequatchie	......	......	......	......	......	......	......	......	......	......	......	......
Sevier	......	......	......	8	......	8	......	......	......	16	......	16
Shelby	972	709	1,681	813	746	1,559	227	226	453	147	145	292
Smith	63	24	87	22	4	26	21	12	33	102	18	120
Stewart	85	16	101	21	3	24	4	......	4	25	3	28
Sullivan	8	......	8	7	......	7	8	......	8	3	2	5
Sumner	2	1	3	34	6	40	76	21	97	171	155	326
Tipton	47	46	93	84	69	153	50	52	102	......	......	......
Trousdale	......	......	......	......	......	......	......	......	......	6	20	26
Unicoi	3	......	3	1	......	1	......	......	......	......	......	......
Union	1	......	1	......	......	......	......	......	......	5	6	11
Van Buren	31	......	31	17	4	21	1	......	1	8	3	11
Warren	......	......	......	19	......	19	38	4	42	22	5	27
Washington	2	......	2	15	......	15	6	......	6	17	......	17
Wayne	......	......	......	6	3	9	......	......	......	75	19	94
Weakley	132	......	132	46	4	50	37	......	37	100	6	106
White	5	......	5	17	9	26	6	......	6	31	1	32
Williamson	10	1	11	7	10	17	22	2	24	36	11	47
Wilson	......	......	......	18	7	25	13	2	15	5	4	9
Total	3,560	1,514	5,074	4,852	1,802	6,654	2,467	1,098	3,565	4,483	1,841	6,324

TABLE 4.—*Types of infection reported diagnosed microscopically, by counties, by years.*

[The figures indicate the numbers of cases reported diagnosed microscopically. The sign + indicates that cases were reported, but the diagnosis was not confirmed by the microscope. This information was collected during the years 1913 and 1914 only.]

County.	Tertian.		Quartan.		Estivo-autumnal.	
	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.
Anderson	.....	+	.....	.....	.....	.....
Bedford	+	1	.....	+	.....	+
Benton	+	+	+	+	.....	+
Bledsoe	.....	+	.....	+	.....	+
Blount	.....	+	.....	+	+	.....
Bradley	.....	+	.....	+	+	2
Campbell	.....	+	.....	.....	.....	.....
Carroll	.....	3	+	.....	.....	.....
Carter	.....	.....	.....	1	.....	.....
Cheatham	+	+	+	+	.....	.....
Chester	+	+	+	+	+	+
Claiborne	.....	+	.....	.....	.....	+
Clay	.....	+	.....	.....	.....	+
Cocke	+	.....	.....	.....	.....	.....
Coffee	.....	4	.....	+	.....	+
Crockett	20	+	26	+	.....	+
Cumberland	.....	2	.....	.....	.....	.....
Davidson	44	57	12	1	13	7
Decatur	+	+	.....	+	.....	+
Dekalb	+	1	+	.....	+	+
Dickson	+	+	+	+	+	+
Dyer	+	7	+	10	+	2
Fayette	41	2	2	+	1	+
Fentress	+	.....	.....	.....	.....	.....
Franklin	+	+	+	+	.....	+
Gibson	+	54	2	5	+	6
Giles	+	1	+	+	+	+
Grainger	.....	+	.....	+	.....	.....
Greene	+	.....	.....	.....	.....	.....
Grundy	2	+	+	.....	.....	.....
Hamblen	.....	+	.....	.....	.....	.....
Hamilton	18	16	3	+	7	6
Hancock	.....	.....	4	.....	2	.....
Hardeman	+	+	.....	+	+	+
Hardin	+	9	+	+	+	+
Haywood	+	.....	2	.....	.....	2
Henderson	+	+	+	+	.....	.....
Henry	.....	+	.....	+	.....	+
Hickman	+	+	.....	+	.....	.....
Houston	+	2	+	.....	.....	+
Humphreys	+	3	+	+	.....	1
Jackson	.....	+	+	+	.....	.....
Jefferson	3	+	1	+	1	2
Johnson	4	.....	.....	.....	.....	.....
Knox	11	49	6	3	13	63
Lake	4	+	.....	+	.....	.....
Lauderdale	+	9	2	+	2	+
Lawrence	5	+	.....	.....	.....	+
Lewis	.....	+	.....	.....	.....	.....
Lincoln	+	4	+	2	+	+
Loudon	.....	+	.....	.....	.....	+
McMinn	.....	+	.....	.....	.....	.....
McNairy	.....	+	.....	+	.....	+
Macon	.....	1	.....	.....	.....	+
Madison	.....	15	.....	4	.....	4
Marion	+	+	.....	+	.....	+
Marshall	+	+	+	.....	+	+
Maury	+	1	.....	.....	+	+
Monroe	+	+	.....	.....	+	+
Montgomery	+	10	.....	+	+	2
Morgan	+	.....	.....	.....	+	.....
Obion	+	14	+	+	+	+
Overton	.....	1	.....	.....	.....	1
Perry	.....	1	.....	.....	.....	4
Pickett	.....	+	.....	.....	.....	+
Polk	+	+	.....	.....	.....	.....
Putnam	+	+	.....	+	.....	1
Rhea	+	+	+	.....	.....	.....
Roane	+	+	+	.....	+	+
Robertson	+	+	+	+	+	1
Rutherford	10	43	.....	1	.....	.....

TABLE 4.—*Types of infection reported diagnosed microscopically, by counties, by years*—Continued.

County.	Tertian.		Quartan.		Estivo-autumnal.	
	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.
Scott		+		+		+
Sequatchie		+				
Sevier		+				
Shelby	369	137	82	6	141	31
Smith	+	+	5	+	+	+
Stewart	+	2				+
Sullivan	4		+	1	1	+
Sumner	+	4				
Tipton	+	2	+	2	+	1
Unicoi	+	+				
Union	+					
Van Buren	3	4	+	+	1	
Warren		+				+
Washington	+	3				+
Wayne		+				
Weakley	2	+	+	1	+	1
White	+	1				
Williamson	+	5		1	1	+
Wilson		+		+		
Total	540	468	147	38	183	137

TABLE 5.—*Hemoglobinuric fever reported, 1916.*

County.	Period.	Cases.
Hardeman	Third quarter	3
Haywood	do	1
Weakley	do	1
Carroll	Fourth quarter	1
Hardeman	do	2
Lauderdale	do	3